Attorney Docket No. 1500.1084

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:

John Schrag et al.

Application No.: 10/627,974 Group Art Unit: 2179

Confirmation No. 4092

Filed: July 28, 2003 Examiner: Nicholas Augustine

For: A 3D SCENE ORIENTATION INDICATOR SYSTEM WITH SCENE ORIENTATION CHANGE CAPABILITY

**INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure provisions of 37 CFR § 1.56, there is hereby provided certain information which the Examiner may consider material to the examination of the subject U.S. patent application. It is requested that the Examiner make this information of record if it is deemed material to the examination of the subject application.

1. Enclosures accompanying this Information Disclosure Statement are:

- 1a. ☒ Form PTO-1449.
- 1b. ☒ Copy(ies) of IDS citation(s), except for U.S. Patents and U.S. Patent Application publications.
- 1c. ☐ English language copy of a communication(s) from a foreign Patent Office or a PCT International Search Report.
- 1d. ☐ English language translation (complete, Abstract or relevant portion(s)) attached to non-English language publications as indicated on the attached Form PTO-1449.
- 1e. ☒ Explanations of Relevancy of References (ATTACHMENT 1(e), hereto) for providing a concise explanation of non-English publications.
- 1f. ☒ List of Copending Applications (ATTACHMENT 1(f), hereto).
- 1g. ☐ List of Additional Submitted Documents (ATTACHMENT 1(g), hereto).

2. ☐ This Information Disclosure Statement is filed under 37 CFR § 1.97(b):

(*Check either Item 2a or 2b or 2c or 2d*)

- 2a. ☐ Within three months of the filing date of a national application;
- 2b. ☐ Within three months of the date of entry of the national stage as set forth in § 1.491 in an international application.
- 2c. ☐ Before the mailing of a first Office Action on the merits; or
- 2d. ☐ Before the mailing of a first Office Action after the filing of a Request for Continued Examination under § 1.114.

3. ☐ This Information Disclosure Statement is filed under 37 CFR § 1.97(c) after the period specified in paragraph 2 above but before the mailing date of any of a Final Office Action under § 1.113, a Notice of Allowance under § 1.311 or an action that otherwise closes prosecution in the application, AND

(*Check either Item 3a or 3b; Item 3b to be checked if any reference known for more than 3 months*)

3a. ☐ The § 1.97(e) Statement in Item 5 below is applicable; OR

3b. ☐ The $180.00 fee set forth in 37 CFR § 1.17(p) is:

☐ enclosed.

☐ to be charged to Deposit Account No. 19-3935.

4. ☒ This Information Disclosure Statement is filed under 37 CFR § 1.97(d) after the period specified in paragraph 3 above, but on or before payment of the Issue Fee, AND

4a. ☐ The § 1.97(e) Statement in Item 5 below is applicable; AND

4b. ☒ The $180.00 fee set forth in 37 CFR § 1.17(p) is:

☐ enclosed.

☒ to be charged to Deposit Account No. 19-3935.

5. ☐ Statement under § 1.97(e) (*applicable if Item 3a or Item 4a is checked*)

(*Check either Item 5a or 5b*)

5a. ☐ In accordance with 37 CFR § 1.97(e)(1), it is stated that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement.

5b. ☐ In accordance with 37 CFR § 1.97(e)(2), it is stated that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in this Information Disclosure Statement was known by any individual designated in § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

6. ☐ This is a continuation/divisional/continuation-in-part application under 37 CFR § 1.53(b).

(*Check appropriate Items 6a and/or 6b*)

6a. ☐ Copies of the publications listed on the attached Form PTO-1449 which were previously cited in prior application Serial No. __, filed on __, and which is relied on for an earlier effective filing date for the subject application under 35 U.S.C. § 120, have been omitted pursuant to 37 CFR § 1.98(d).

6b. ☐ Copies of the publications listed on the attached Form PTO-1449 which were not previously cited in prior application Serial No. __, filed on __, and which is relied on for an earlier effective filing date for the subject application under 35 U.S.C. § 120, are provided herewith.

7. ☐ This is a Request for Continued Examination under 37 CFR § 1.114.

(*Check either Item 7a or 7b*)

7a. ☐ The Issue Fee has not been paid.

7b. ☐ A Petition to Withdraw from issue under 37 CFR § 1.313(c) is filed concurrently herewith or has been granted. A Request for Continued Examination under 37 CFR § 1.114, after payment of the Issue Fee, is proper in accordance with 37 CFR § 1.114(a), respectively.

8. ☐ This is a Supplemental Information Disclosure Statement.

(*Check either Item 8a or 8b*)

8a. ☐ This Supplemental Information Disclosure Statement under 37 CFR § 1.97(f) supplements the Information Disclosure Statement filed on __. A bona fide attempt was made to comply with 37 CFR § 1.98, but inadvertent omissions were made. These omissions have been corrected herein. Accordingly, additional time is requested so that this Supplemental IDS can be considered as if properly filed on __.

8b. ☐ This Supplemental Information Disclosure Statement is timely filed within one (1) month of the Notice under 37 CFR §§ 1.97 and 1.98, mailed __.

9. ☐ In accordance with 37 CFR § 1.98, a concise explanation of what is presently understood to be the relevance of each non-English language publication is:

(*Check appropriate Items 9a, 9b, 9c and/or 9d*)

9a. ☐ satisfied for the non-English language publication(s) cited on the enclosed "English language version of the search report or action which indicates the degree of relevance found by the foreign office". (See MPEP § 609, Minimum Requirements for an Information Disclosure Statement, Part A(3): Concise Explanation of Relevance, 8th Ed., Rev. 2)

9b. ☐ set forth in the application.

9c. ☐ satisfied for the non-English language publication(s) indicated on the attached Form PTO-1449 as having an English language translation (complete or relevant portion(s)) attached thereto.

9d. ☐ enclosed as Attachment 1(e), hereto.

10. No admission is made that the information cited in this Statement is, or is considered to be, material to patentability nor a representation that a search has been made (other than search report(s) from a counterpart foreign application or a PCT International Search Report, if submitted herewith). 37 CFR §§ 1.97(g) and (h).

11. The Commissioner is authorized to credit any overpayment or charge any additional fee required under 37 CFR § 1.17 for this Information Disclosure Statement to Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Dated: September 18, 2007

By: /J. Randall Beckers/
J. Randall Beckers
Registration No. 30,358

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| FORM PTO-1449 | U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE | ATTORNEY DOCKET NO. | APPLICATION NO. |
|---|---|---|---|
| INFORMATION DISCLOSURE STATEMENT | | 1500.1084 | 10/627,974 |
| | | FIRST NAMED INVENTOR | |
| | | John Schrag et al. | |
| *(Use several sheets if necessary)* | | FILING DATE | GROUP ART UNIT |
| | | July 28, 2003 | 2179 |

**U.S. PATENT DOCUMENTS**

| *EXAMINER INITIAL | | DOCUMENT NO. | DATE | NAME | CLASS | SUB-CLASS | FILING DATE |
|---|---|---|---|---|---|---|---|
| | AA | | | | | | |

| OTHER REFERENCES **(Including Author, Title, Date, Pertinent Pages, Etc.)** | | | TRANSLATION YES | TRANSLATION NO |
|---|---|---|---|---|
| /N.A./ | AB | R. Balakrishnan et al. (1999) "Exploring bimanual camera control and object manipulation in 3D graphics interfaces," In Proceedings of ACM CHI, pp. 56-63. | | |
| | AC | W. Bares et al., (2001) "Generating Virtual Camera Compositions," In Proceedings of ACM IUI'01, pp. 9-12. | | |
| | AD | W. Bares et al., (1999) "Intelligent Multi-Shot Visualization Interfaces for Dynamic 3D Worlds," Proceedings of ACM IUI '99, pp. 119-126. | | |
| | AE | P. Baudisch et al., (2005) "Snap-andgo: helping users align objects without the modality of traditional snapping," In ACM Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, CHI '05, pp. 301-310. | | |
| | AF | E. A. Bier, (1990) "Snap-dragging in three dimensions," In ACM Proceedings of the 1990 Symposium on interactive 3D Graphics, pp. 193-204. | | |
| | AG | D. Bowman et al., (1999) "Testbed environment of virtual environment interaction," In Proceedings of ACM VRST, pp. 26-33. | | |
| | AH | D. Bowman et al., (1997) "Travel in immersive virtual environments," IEEE VRAIS'97 Virtual Reality Annual International Symposium, pp. 45-52. | | |
| | AI | N. Burtnyk et al.,(2002) "StyleCam: Interactive Stylized 3D Navigation using integrated Spatial and Temporal Controls," In Proceedings of ACM UIST 2002, pp. 101-110. | | |
| | AJ | D. B. Christianson et al., (1996) "Declarative camera control for automatic cinematography," Proceedings of AAAI '96 (Portland, OR), pp. 148-155. | | |
| | AK | S. Drucker et al., (1995) "CamDroid: A System for Implementing Intelligent Camera Control," In Proceedings of ACM Symposium on Interactive 3D Graphics, pp. 139-144. | | |

| EXAMINER | DATE CONSIDERED |
|---|---|
| /Nicholas Augustine/ | 1/4/2008 |

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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|---|---|---|---|---|---|---|---|
| | BA | | | | | | |

OTHER REFERENCES **(Including Author, Title, Date, Pertinent Pages, Etc.)**

| | | | TRANSLATION YES | TRANSLATION NO |
|---|---|---|---|---|
| /N.A./ | BB | Galyean, T. (1995) "Guided navigation of virtual environments," ACM Symposium on Interactive 3D Graphics, pp.103-104. | | |
| | BC | M. Gliecher et al. (1992) "Through-the-lens camera control," ACM SIGGRAPH 92, pp. 331-340. | | |
| | BD | T. Grossman et al., (2001) "Interaction techniques for 3D modeling on large displays." In Proceedings of the 2001 Symposium on interactive 3D Graphics SI3D '01, pp. 17- 23. | | |
| | BE | A. Hanson et al., (1997) "Constrained 3D navigation with 2D controllers," IEEE Visulization, pp. 175-182. | | |
| | BF | L. He et al., (1996) "The virtual cinematographer: a paradigm for automatic real-time camera control and directing," ACM SIGGRAPH 96, pp. 217-224. | | |
| | BG | D. A. Henderson et al. (1986) "Rooms: the use of multiple virtual workspaces to reduce space contention in a window-based graphical user interface," ACM Transactions on Graphics (TOG), 5(3), pp. 211-243. | | |
| | BH | T. Igarashi et al., (1998) "Path drawing for 3D walkthrough," ACM UIST, pp. 173-174. | | |
| | BI | S. Jul et al., (1998) "Critical zones in desert fog: aids to multiscale navigation," ACM Symposium on User Interface Software and Technology, pp. 97-106. | | |
| | BJ | A. Khan et al., (2005) "HoverCam: interactive 3D navigation for proximal object inspection," In Proceedings of ACM Symposium on Interactive 3D graphics and games, pp.73-80. | | |
| ↓ | BK | J. Mackinlay et al., (1990) "Rapid controlled movement through a virtual 3D workspace," ACM SIGGRAPH 90, pp.171-176. | | |

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| /Nicholas Augustine/ | 1/4/2008 |

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| *EXAMINER INITIAL | | DOCUMENT NO. | DATE | NAME | CLASS | SUB-CLASS | FILING DATE |
|---|---|---|---|---|---|---|---|
| | CA | | | | | | |

OTHER REFERENCES **(Including Author, Title, Date, Pertinent Pages, Etc.)**

| | | | TRANSLATION YES | TRANSLATION NO |
|---|---|---|---|---|
| /N.A./ | CB | C. B. Phillips et al., (1992) "Automatic Viewing Control for 3D Direct Manipulation," In ACM Proceedings of ACM Symposium on Interactive 3D Graphics, pp. 71-74. | | |
| | CC | J. S. Pierce et al., (1999) "Toolspaces and glances: storing, accessing, and retrieving objects in 3D desktop applications," In ACM Proceedings of the 1999 Symposium on interactive 3D Graphics, SI3D, pp. 163-168. | | |
| | CD | S. Rezzonico et al., (1996) "Browsing 3D Bookmarks in BED," WebNet 1996. | | |
| | CE | G. Robertson et al., (1989) "The cognitive coprocessor architecture for interactive user interfaces," In Proceedings of ACM UIST 1989, pp 10-18. | | |
| | CF | G. Smith et al., (2001) "3D Scene Manipulation with 2D Devices and Constraints," Proceedings of Graphics Interface, pp. 135-142. | | |
| | CG | A. Steed (1997) "Efficient navigation around complex virtual environments," ACM VRST, pp. 173-180. | | |
| | CH | R. Stoakley et al., (1995) "Virtual reality on a WIM: Interactive worlds in miniature," ACM CHI, pp. 265-272. | | |
| | CI | S. L. Stoev et al. (2002) "A Case Study on Automatic Camera Placement and Motion for Visualizing Historical Data," Proceedings of IEEE Visualization, pp. 545-558. | | |
| | CJ | D. Tan et al., (2001) "Exploring 3D navigation: combining speed-coupled flying with orbiting," ACM CHI, pp.418-425. | | |
| | CK | M. Tory et al. (2004) "Combining 2D and 3D views for orientation and relative position tasks," In ACM Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, CHI '04, pp. 73-80. | | |
| | CL | M. Wan et al. (2001) "Distance-Field Based Skeletons for Virtual Navigation," IEEE Visualization 2001, pp .239-245. | | |

| EXAMINER | DATE CONSIDERED |
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| /Nicholas Augustine/ | 1/4/2008 |

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**U.S. PATENT DOCUMENTS**

| *EXAMINER INITIAL | | DOCUMENT NO. | DATE | NAME | CLASS | SUB-CLASS | FILING DATE |
|---|---|---|---|---|---|---|---|
| | DA | | | | | | |

OTHER REFERENCES **(Including Author, Title, Date, Pertinent Pages, Etc.)**

| | | | TRANSLATION YES | TRANSLATION NO |
|---|---|---|---|---|
| /N.A./ | DB | C. Ware et al., (1997) "Context sensitive flying interface," ACM Symposium on Interactive 3D Graphics, pp. 127-130. | | |
| | DC | C. Ware et al., (1990) "Exploration and virtual camera control in virtual three dimensional environments," ACM Symposium on Interactive 3D Graphics, pp. 175-183. | | |
| | DD | R. Zeleznik et al., (1999) "UniCam - 2D Gestural Camera Controls for 3D Environments," ACM Symposium on Interactive 3D Graphics, pp. 169-173. | | |
| | DE | R. Zeleznik et al., (1997) "Two pointer input for 3D interaction," ACM Symposium on Interactive 3D Graphics, pp. 115-120. | | |
| | DF | | | |
| | DG | | | |
| | DH | | | |
| | DI | | | |
| | DJ | | | |
| | DK | | | |
| | DL | | | |

| EXAMINER | DATE CONSIDERED |
|---|---|
| /Nicholas Augustine/ | 1/4/2008 |

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ATTACHMENT 1(e)

| EXPLANATIONS OF RELEVANCY OF REFERENCES | ATTORNEY DOCKET NO. | APPLICATION NO. |
|---|---|---|
| | 1500.1084 | 10/627,974 |
| | FIRST NAMED INVENTOR | |
| | John Schrag et al. | |
| | FILING DATE | GROUP ART UNIT |
| | July 28, 2003 | 2179 |

The Case 11/729,211, Three-Dimensional Orientation Indicator and Controller (Cube Compass) by Khan et al. filed May 18, 2007, is an improvement to the subject matter of the current application.

The references filed herewith are the references cited in the 11/729,211 case noted above.

ATTACHMENT 1(f)

| LIST OF COPENDING APPLICATIONS | ATTORNEY DOCKET NO. | APPLICATION NO. |
|---|---|---|
| | 1500.1084 | 10/627,974 |
| | FIRST NAMED INVENTOR | |
| | John Schrag et al. | |
| | FILING DATE | GROUP ART UNIT |
| | July 28, 2003 | 2179 |

The following, prior-filed, copending U.S. patent application(s) is/are listed in accordance with the duty of disclosure provisions of 37 CFR § 1.56, so that the Examiner may consider same should he deem any thereof to be material to examination of the subject application. Pursuant to 37 CFR § 1.98(a)(2)(iii), a copy of the identified copending application(s) is provided, UNLESS DOMESTIC PRIORITY IS CLAIMED THEREON UNDER 35 U.S.C. § 120 AND/OR THE APPLICATION IS PUBLISHED. 37 CFR § 1.98(a)(2)(II),(III) AND 1.98(3)(d)(1).

It is requested that the Examiner acknowledge his consideration of application(s) below-listed by initialling same in the space provided adjacent each such application and that the Examiner sign and date this form at the bottom thereof to confirm such consideration having been given.

**This submission in no way represents an admission that any of the information listed herein constitutes prior art with respect to the subject application; and unless and until such prior art status is established, this submission is not a request that the information presented herein be printed on the face of any patent issuing from the subject application in which this information is being filed.**

**U.S. PATENT APPLICATION DOCUMENTS**

| *EXAMINER INITIAL | | U.S. SERIAL NO. | FILING DATE | NAME | ASSIGNEE |
|---|---|---|---|---|---|
| /N.A./ | 1 | 11/729,211 | 05/18/2007 | Azam Khan et al. | |
| | 2 | | | | |
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| EXAMINER | DATE CONSIDERED |
|---|---|
| /Nicholas Augustine/ | 1/4/2008 |

*EXAMINER: Initial if document considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

**ATTACHMENT 1(g)**

| LIST OF ADDITIONAL SUBMITTED DOCUMENTS | ATTORNEY DOCKET NO. 1500.1084 | APPLICATION NO. 10/627,974 |
|---|---|---|
| | FIRST NAMED INVENTOR John Schrag et al. | |
| | FILING DATE July 28, 2003 | GROUP ART UNIT 2179 |

The following document(s) is/are listed in accordance with the duty of disclosure provisions of 37 CFR § 1.56, so that the Examiner may consider same should he deem any thereof to be material to examination of the subject application.

It is requested that the Examiner acknowledge his consideration of document(s) below-listed by initialling same in the space provided adjacent each such application and that the Examiner sign and date this form at the bottom thereof to confirm such consideration having been given.

**This submission in no way represents an admission that any of the information listed herein constitutes prior art with respect to the subject application; and unless and until such prior art status is established, this submission is not a request that the information presented herein be printed on the face of any patent issuing from the subject application in which this information is being filed.**

| *EXAMINER INITIAL | | OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) | TRANSLATION YES | TRANSLATION NO |
|---|---|---|---|---|
| /N.A./ | AA | N. Burtnyk et al. (2006) ShowMotion: camera motion based 3D design review. In Proceedings of the 2006, Symposium on interactive 3D Graphics and Games, SI3D '06, pp. 167-174. | | |
| | AB | O. Chapuis et al. (2005) Metisse is not a 3D desktop!. In Proceedings of the 18th Annual ACM Symposium on User interface Software and Technology, UIST '05, pp. 13-22. | | |
| | AC | L. Chittaro et al. (2004) 3D location-pointing as a navigation aid in Virtual Environments. In ACM Proceedings of the Working Conference on Advanced Visual interfaces (Gallipoli, Italy, May 25 - 28, 2004). AVI '04, pp. 267- 274. | | |
| | AD | R. Komerska et al, (2003) "Haptic-GeoZui3D: Exploring the Use of Haptics in AUV Path Planning", Proceedings 13th International Symposium on Unmanned Untethered Submersible Technology (UUST'03), Durham, NH. | | |
| | AE | K. Singh et al., (2004) Visualizing 3D Scenes using Non-Linear Projections and Data Mining of Previous Camera Moves. In Proceedings of ACM Computer Graphics, Virtual Reality, Visualization and Interaction in Africa, pp. 41-48. | | |
| | AF | M. Tory (2003) Mental Registration of 2D and 3D Visualizations (An Empirical Study). In Proceedings of the 14th IEEE Visualization 2003 (Vis'03) pp.371-379. | | |
| | AG | M. Tory et al. (2003) Comparing ExoVis, Orientation Icon, and In-Place 3D Visualization Techniques. In Proceedings of Graphics Interface, pp. 57-64. | | |

| EXAMINER /Nicholas Augustine/ | DATE CONSIDERED 1/4/2008 |
|---|---|

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